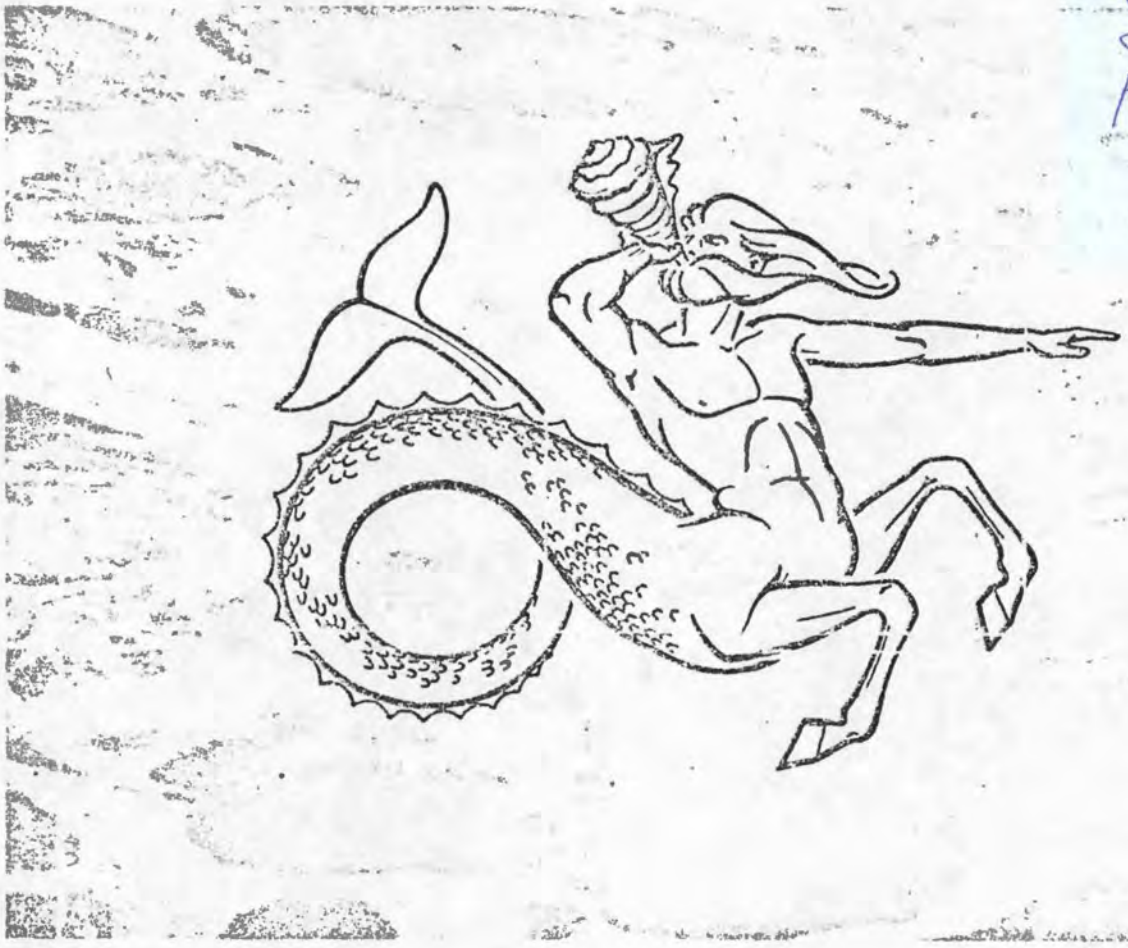
Oceanographic Studies

Fred
Late but as
I promised
Hope it is
useful
John J.
8/24/97



THE MARINE ENVIRONMENT OFFSHORE THE
LOS ANGELES DEPARTMENT OF WATER & POWER
SCATTERGOOD GENERATING PLANT

JANUARY - FEBRUARY 1970 SURVEY

Prepared for

Department of Water & Power
P.O. Box 111
Los Angeles, California 90054

March 1970

Bendix Marine Advisers, Inc

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a subsidiary of THE BENDIX CORPORATION

March 1970

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FISHERY OF SANTA MONICA BAY

Santa Monica Bay provides both a sport and a small commercial fishery. The bulk of the sport fishery is conducted in the area lying between Point Dume (34° 00.0' N, 118° 48.4' W), Palos Verdes Point (33° 36.5' N, 118° 05.7' W), and out to the 100-fathom curve. (This area is bounded by a line connecting the two points, Figure 7.) Within this region a consistent and comprehensive collection of sport species landing statistics is regularly compiled by the Resources Agency facilities of the Department of Fish and Game. Data have been analyzed here in order to determine the nature of the sport fishery during the past half-dozen years near the Scattergood site, which is 33° 55.2' N, 118° 25.6' W.

Santa Monica Bay's active sport fishery supports businesses providing skiff rentals, launch ramps, party boats, and marinas, which are relatively plentiful between Point Dume and Redondo Beach. In addition to these, there are also barges anchored near the 10-fathom line that provide access to fishing waters. Several sections of the coast are used for surf and pier fishing. Kelp beds that lie at the northern and southern ends of the Bay are popular for sports fishermen. Beyond 50 fathoms, a commercial anchovy live-bait fishery is carried on by boats supplying the sport fleet. A small fresh-fish industry of long standing is based at Santa Monica. The commercial fishing community is out-numbered by far, both in numbers of vessels and fishermen, by the recreation-oriented population. A good indication of the condition of the Santa Monica Bay fisheries can be obtained by examining data relating to the sport and party boat fisheries.

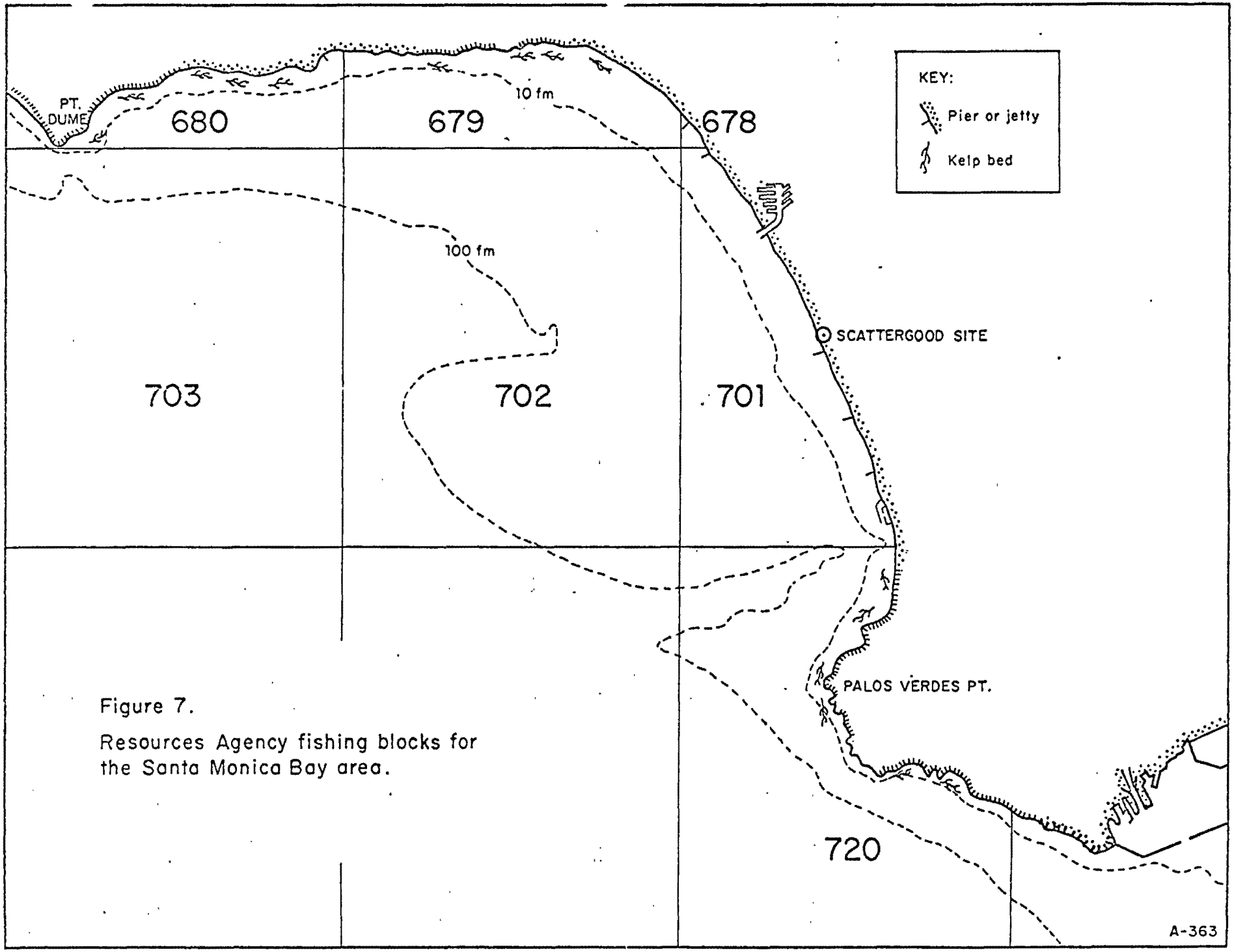

Figure 7.

Resources Agency fishing blocks for the Santa Monica Bay area.

The major sport-boat fishing areas of Santa Monica Bay are found offshore along six miles of the coast that run directly east of Point Dume, over Redondo Canyon on the 50-fathom curve, and on the Palos Verdes coast between Malaga Cove and Long Point.

Surf fishing, on the other hand, is most popular in places where the beaches are readily accessible from public roads. Some fishermen prefer small and isolated rocky headlands, which are found near Point Dume and again about the Palos Verdes headland. The coastline between these two promontories is about 35 miles in length.

Focal points of shore-bound fishing are found at piers and jetties on both sides of the Scattergood site. These include Santa Monica Municipal Pier, training jetties at Marina del Rey, Manhattan Beach Pier, Hermosa Beach Pier, and a pier complex at King Harbor.

Other artifical structures, such as demolished automobile and street car "havens", breakwaters, as well as a number of sewage disposal lines provide fishing.

Year-round fishing out on the Bay yields kelp bass, bonito, and a variety of rockfish such as vermilion, olive, and bocaccio (Table 7). Offshore and east of Point Dume these same species, plus seasonal occurrences of California halibut (spring and summer), Pacific mackerel (summer), and white sea bass (summer, in warm years) can be expected. Rockfish areas are also found off Palos Verdes. Incursions of barracuda, yellowtail, and bluefin tuna take place in the southern reaches of the Bay, particularly when sea surface temperatures are above normal.

Table 7

Principal Species Found in Party Boat Landings from Santa Monica Bay, 1969

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Serranidae												
Kelp and Sand basses	147	43	266	1,783	12,341	33,825	57,003	43,263	17,606	9,989	4,368	1,270
Branchiostegidae												
Ocean whitefish	-	226	-	-	-	-	-	-	-	269	-	-
Carangidae												
California yellowtail	-	-	-	-	13	26	54	61	-	-	-	24
Sciaenidae												
White sea bass	-	-	-	-	90	90	180	-	-	-	2	26
White croaker	-	-	-	-	-	-	-	-	357	253	34	-
Scorpidae												
Halfmoon	-	-	600	-	3,825	6,976	6,315	9,611	5,361	585	-	-
Scombridae												
Pacific Mackerel	385	-	-	-	-	-	-	-	-	2	1	-
Pacific bonito	1,638	145	829	830	10,477	8,642	24,460	17,468	8,789	13,555	4,302	994

Table 7 (Continued)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Scorpaenidae												
Rockfishes	29,686	29,563	75,142	70,627	42,881	5,164	12,052	16,077	23,089	30,029	56,361	45,092
Sculpin	32	2	386	956	192	-	-	-	-	633	-	
Hexagrammidae												
Lingcod	-	12	-	20	17	6	-	16	25	-	67	14
Sphyraenidae												
California barracuda	-	-	1	58	436	639	5,638	1,392	9,355	7,373	2,438	1,038
Bothidae												
California halibut	26	-	76	62	364	276	232	339	613	387	158	12
Pleuronectidae												
Flounders	64	25	245	297	-	-	-	-	-	-	-	-
Others	81	324	191	68	1,457	2,292	2,201	2,470	3,076	325	925	639
Total fish	32,059	30,340	77,735	74,711	72,093	57,961	108,141	90,697	68,271	63,400	68,656	49,109
Anglers	2,365	2,301	5,539	6,266	6,779	7,906	15,515	14,746	10,995	8,773	7,335	4,541

Rocky shore species include the perches and rockfishes. Shiner and black perch, grass and olive rockfish, halfmoon, sargo, the ubiquitous opaleye, together with cabezon, are often taken.

Sandy shore fishing takes place seven miles either side of the Scattergood site. Species in this catch are usually surfperches, croakers, and intermittantly, California halibut and corbina. Grunion run from Malibu down to Palos Verdes, and they are taken in season during beach parties at high tides in warm weather.

A slightly different spectrum of species is taken from piers and jetties. One of the most favored is the over-fished California halibut, a spring-and-summer mainstay. Other species are the barred, black, walleye, pile, and silver surfperches along with mackerels and jacksmelt.

A grid of seven blocks has been established to facilitate the collection of landings data in the Bay. This grid has been developed along 10-degree increments of latitude and longitude. Block 701 contains the power station site that is of interest in this study, Scattergood being almost at the center of an 11-mile coastline that runs NNW-SSE through it. Almost all of block 701 lies within the 50-fathom curve. There are no large stands of kelp in it such as are found in adjoining blocks 679 and 720. Redondo Canyon reaches to the 10-fathom curve and effectively divides 701 from 720. Similarly, Dume Canyon marks the upper reaches of Santa Monica Bay.

Landings data for six blocks covering the Bay's inshore areas were extracted from files covering years 1962 to 1968 (Figures 8 and 9). Within this period of time the party boat fleet produced 3.1 million fish. An average of 1.6 fish were taken per hour of fishing effort (Tables 8 and 9). Other studies indicate that in southern California private boat fishing is as large or larger than

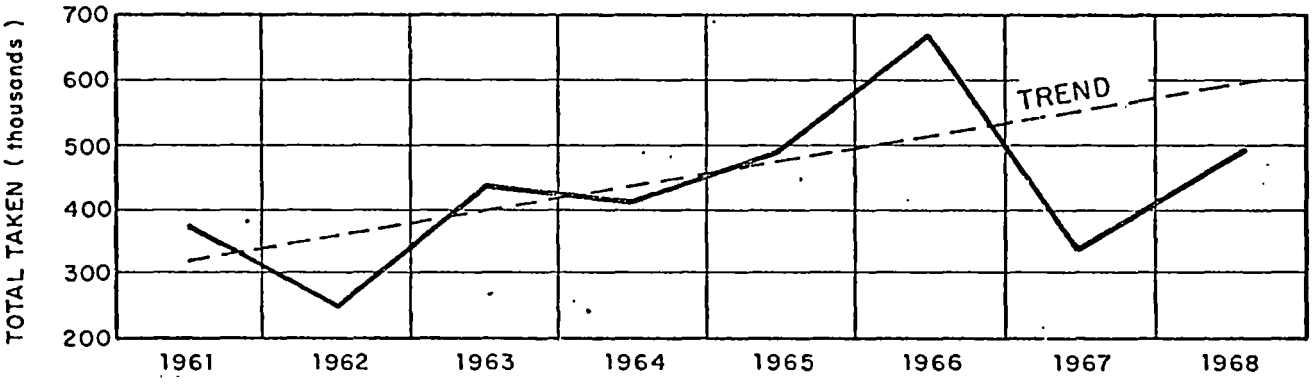

Figure 8.

Number of fishes removed from Santa Monica Bay annually by party boat fishermen, 1961 to 1968.

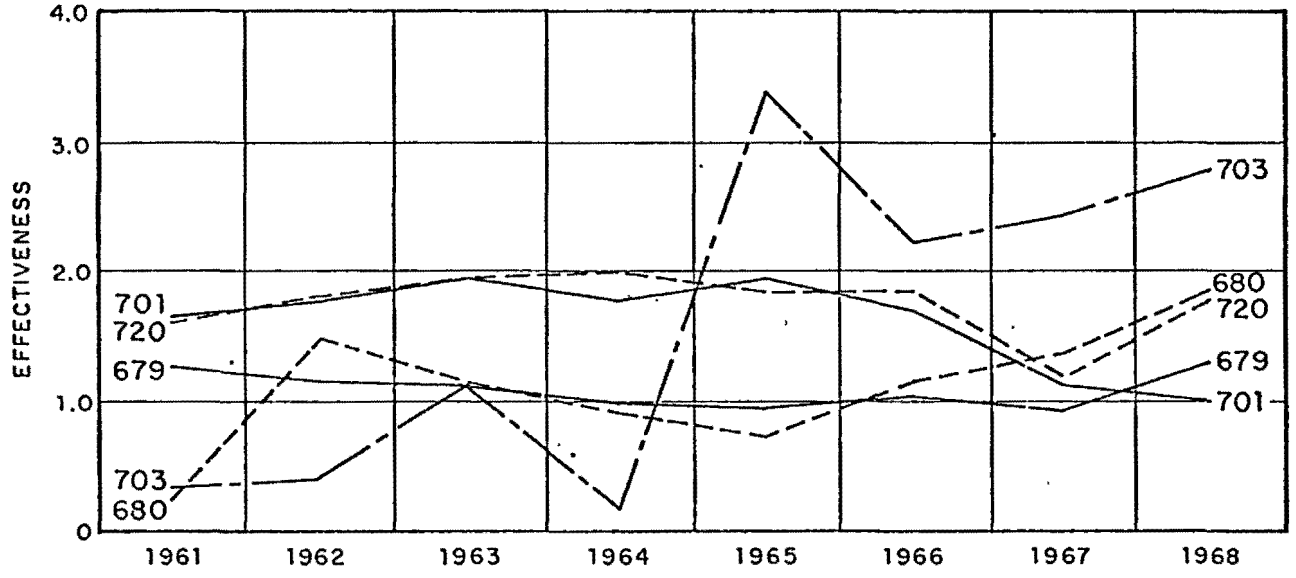

Figure 9.

Fishing effectiveness of the party boat fleet, as shown by block area, in Santa Monica Bay, 1961 to 1968.

ANNUAL LANDINGS AND FISHING EFFECTIVENESS OF THE PARTY BOAT FLEET
IN SANTA MONICA BAY, 1961-1968

Block	1961	1962	1963	1964	1965	1966	1967	1968	
	Numbers of Fishes								
680	24,957	38,356	67,247	59,650	45,562	77,154	97,566	133,783	
679	118,192	56,546	73,595	78,500	67,482	63,686	43,590	68,850	
678	n.d.	208	n.d.	n.d.	n.d.	n.d.	n.d.	092	
703	2,455	2,410	1,320	045	780	1,781	783	14,153	
701	71,870	24,726	82,423	112,993	139,129	119,980	10,953	6,251	
720	170,311	132,774	205,900	159,001	236,810	419,408	182,525	274,901	
	387,785	255,020	430,485	410,189	489,763	682,009	335,417	498,030	
									Average
680	0.17	1.50	1.16	0.91	0.82	1.16	1.34	1.82	1.2
679	1.24	1.11	1.10	0.98	0.96	1.01	0.90	1.29	1.0
678	n.d.	0.17	n.d.	n.d.	n.d.	n.d.	n.d.	2.2.30	1.3
703	0.28	0.36	1.10	0.14	3.42	2.20	2.45	2.74	1.6
701	1.61	1.73	1.94	1.77	1.95	1.66	1.11	1.01	1.6
720	1.58	1.77	1.93	2.00	1.78	1.81	1.29	1.80	1.7

Table 9

RELATIVE EFFECTIVENESS AND FREQUENCY IN CATCH BY PRINCIPAL SPECIES AND BLOCK AREA, SANTA MONICA BAY, 1964 TO 1968

Block and Species	Effectiveness					Percentage of Catch				
680	1964	1965	1966	1967	1968	1964	1965	1966	1967	1968
Sea basses	0.31	0.49	0.50	0.54	0.43	34	59	43	40	24
Bonito	0.32	0.08	0.14	0.08	0.15	35	10	12	6	8
Rockfishes	0.03	0.11	0.30	0.63	1.14	4	13	26	48	63
Halibut	0.13	0.08	0.08	0.02	0.02	14	10	7	2	1
679										
Sea basses	0.36	0.47	0.48	0.39	0.64	35	48	49	44	50
Bonito	0.35	0.24	0.16	0.22	0.35	35	24	14	22	27
Rockfishes	0.01	0.05	0.22	0.15	0.20	1	5	22	18	16
Halibut	0.17	0.16	0.06	0.04	0.02	17	17	6	5	2
701										
Sea basses	0.83	1.04	0.60	0.45	0.60	48	54	36	43	60
Bonito	0.69	0.69	0.39	0.39	0.27	39	35	24	35	27
Rockfishes	0.03	-	0.08	0.13	0.11	2	+	5	11	13
Halibut	0.09	0.08	0.02	0.02	0.01	5	4	1	+	2
720										
Sea basses	0.54	0.53	0.26	0.31	0.52	27	29	15	24	30
Bonito	1.06	0.51	0.33	0.28	0.69	55	29	19	22	38
Rockfishes	0.13	0.30	0.32	0.50	0.36	6	17	18	38	20
Halibut	0.04	0.09	0.11	0.89	0.01	+	+	+	+	+

the commercial party boat contingent. No specific data are available to describe the volume of private fishing, but the two fleets are believed to be roughly comparable as to volume of fish taken and fishing efficiency (North, Davies, 1968).

Within the period cited the number of fish taken has been steadily rising. In 1962, 250,000 fish were caught compared to 500,000 in 1968. During 1966, slightly more than 6800,000 fish were taken. Productivity varies among the blocks because of the variations in length of coastline, bottom area, and utilization. Insofar as numbers of fish are concerned, blocks 680, 679, and 701 each produced approximately the same number of fish, that is, one-half million. Block 720 produced three times as many.

Except for block 701, all showed a slight increase in effectiveness of fish removed. In blocks 703 and 720, there was a clearly perceptible increase. Rate of recovery efficiency in block 701, however, has been gradually declining, and between 1963 and 1968 has fallen from 1.94 to 1.01 fish per angling hour. Trawl sampling studies made in the center of the Bay indicate that no untoward effects have been caused by fishing or waste disposal (Carlisle, 1969).

Sixty to ninety per cent of the fish taken from block 701 are made up of kelp and sand basses together with bonito (Table 10). The remaining species are mainly rockfish, barracuda, sculpin, Pacific mackerel, and California halibut. An additional dozen species are caught but in relatively small quantities. An examination of the information on fishing effectiveness indicates that the kelp basses and bonito are being taken with less and less success. In the past five years, their appearance in the catch has decreased by half. Greater variety of other fish is to be expected under these circumstances, but none of the species remaining are in sufficient number to indicate a definite trend in this respect.

Landings data indicate that the variety of species has increased in block 701, and it is possible that Scattergood operation has contributed to this change. This is an effect that may, in the long run, actually improve sportfishing conditions in the Bay.

Table 10

PRINCIPAL SPECIES TAKEN FROM BLOCK 701 BY THE PARTY BOAT FLEET
IN SANTA MONICA BAY, 1960-68

	1960	1961	1962	1963	1964	1965	1966	1967	1968
Serranidae									
Sea basses	37,656	12,308	11,164	36,332	53,133	73,942	43,218	4,387	3,728
Branchiostegidae									
Ocean whitefish	424	148	-	012	014	013	135	001	-
Carangidae									
California yellowtail	10,853	328	002	013	001	004	048	001	008
Sciaenidae									
White seabass	482	014	007	004	080	007	011	001	-
Queenfish	247	527	063	076	212	-	-	081	-
Scorpidae									
Halfmoon	010	063	-	-	-	-	-	050	-
Labridae									
California sheephead	030	011	008	015	020	010	023	002	001
Scombridae									
Pacific mackerel	2,869	2,299	305	1,161	1,846	4,675	3,929	365	-
Pacific bonito	101,169	38,081	10,585	27,348	44,208	48,976	27,870	3,831	1,661
Scorpaenidae									
Sculpin	1,455	518	376	2,578	4,586	2,220	1,888	147	049
Rockfishes	18,282	6,843	292	4,793	1,814	284	6,142	1,243	674
Cottidae									
Cabezon	018	006	004	016	048	017	004	-	-

Table 10 (Continued)

	1960	1961	1962	1963	1964	1965	1966	1967	1968
Sphyraenidae									
California barracuda	104,926	6,995	769	4,065	1,252	2,871	34,858	645	072
Bothidae									
California halibut	5,425	3,644	1,093	5,714	5,752	5,630	1,554	185	058
Pleuronectidae									
Flounder	102	006	002	076	006	009	019	004	-
Miscellaneous									
Total	284,611	71,870	24,726	82,423	112,993	139,129	119,980	10,953	6,251
Anglers	46,856	12,737	5,067	13,810	16,681	19,969	21,922	4,259	1,400
Effeciency	n.d.	n.d.	1.73	1.94	1.77	1.96	1.66	1.11	1.01

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